USDA Forest Service Technical Comments on the Regional Haze State Implementation Plan (RH SIP) for North Dakota

We appreciate the significant resources devoted by the State of North Dakota (ND) in developing a comprehensive, well organized, and easy to follow RH SIP. The projected emissions reductions in the SIP are an important first step toward improving visibility and other air quality related values at the affected Federal Class I areas (CIAs). We do have some concerns with some of the technical analyses and the some of the conclusions made in the RH SIP. These concerns are outlined below.

General Comments

1. We agree with previous comments by the National Park Service (NPS) that Theodore Roosevelt National Park should be treated as one Class I area, not three.

2. In a number of places in the RH SIP, ND characterizes its impact on its own class CIAs as "small." We note that this is a subjective term. Based on our review of RH SIPs from other states, we do not consider ND's percent contribution to visibility impairment in its own CIAs as being significantly different (i.e. smaller) than the other CIA owner states. For example ND's contribution to its CIAs is very similar to Minnesota's contribution to its CIAs. If ND feels this is not true, ND should include data to support this position. Nevertheless each State must demonstrate that it is obtaining "*its share of the emission reductions needed to meet the progress goal for the area,*" per 40 CFR 51.308 (d) 3.

3. The RH SIP should explain how the reasonable progress goals (RPGs) will be revised once the RH SIPs from the neighboring contributing states are available.

4. We note that the State of Minnesota specifically asked ND to analyze the feasibility of reducing electrical generating unit (EGU) emissions in the state to less than 0.25 pounds per million Btu (lb/MMBtu) for sulfur dioxide (SO_2) and less than 0.22 lb/MMBtu for nitrogen oxides (NOx). We found a response from ND that outlined their disagreement with the premise of Minnesota's "ask." Additional information would be helpful comparing the emission level of ND's EGUs after the installation of controls prescribed under the Best Available Retrofit Technology (BART) and Reasonable Progress (RP) analyses.

5. We ask US EPA Regions 5 and 8 to arbitrate the disagreement between ND and Minnesota regarding Minnesota's "ask," as well as working with Canada on reducing emissions from sources in that country, especially the power plants mentioned by ND on page 53 of the RH SIP. This is especially relevant since power is sent across the US-Canada border.

General BART

6. We feel the decision to make Heskett Unit 2 not subject to BART is based on inappropriate modeling. Technical reasons were discussed on the call between ND and

the Federal Land Managers (FLMs) on September 22, 2009, including the use of using fine grid (1 km) modeling. Department of Interior modeling staff will provide more details. Please complete a full BART analysis for this unit. Alternatively, if Heskett is not found to be subject to BART it should be included in the State's reasonable progress analysis and a complete suite of possible control options examined in detail.

7. We would also like to note that the statement that Heskett is proposing a 70% SO_2 emission reduction is misleading. Baseline SO_2 emissions were reported as 2400 tons and the reduction project was reported to reduce emissions by 740 tons. This results in a 31% reduction.

8. EPA BART guidelines (Federal Register, July 6, 2005) on page 39170 directs the State to compare the 98 percentile days, pre-control versus post-control, so we disregarded the 90 percentile days presented in the RH SIP on Page 67.

9. On page 68 ND states "Though single-source modeling is specified in the BART guidance for determining degree of visibility improvement, it is clear that this modeling overstates the real single-source visibility impact." Please add a reference or basis for this statement. ND also adds "an observer's perception of visibility change is affected by the total loading of visibility-affecting species in the atmosphere." We agree. On clean days visibility can be impaired by a small amount of air pollution. That is why it is important to use clean days as a baseline from which to measure impairment from a source. Otherwise clean days are not protected.

10. In the BART section of the SIP ND appears to disregard the importance of EPA's presumptive BART limits. EPA considers these limits to be "generally cost effective" and in the case of scrubbers states, "We expect that scrubber technology will continue to improve and control costs continue to decline" (FR, 7/6/07, pg 39171).

SO_2 BART

11. MR Young Unit 2
    a. We feel the form of the emission limit needs to be reviewed. For example, the emission limit is specified as 95% control efficiency (CE). Therefore the pounds per million Btu (lb/MMBtu) limit should be 0.1 or else the effective limit becomes 0.15 lb/MMBtu which is 90% control. MR Young unit 1 is specified as having just a CE limit and no alternative lb/MMBtu. If Unit 1 can comply with just a CE limit we see no reason why Unit 2 can't also do the same.
    b. At the end of the BART analysis, ND changes the baseline emission level from 2.0 lb/MMBtu to 3.5 lb/MMBtu, which effectively raises the final BART limit. We feel the same baseline emission level should be used throughout the whole BART analysis, which includes calculating the costs per ton, as well as setting the limits.
12. Stanton
    a. It is unclear why this unit can't install a wet scrubber and meet the same limit as the Leland Olds Unit 1 (95% CE) which is a boiler of similar size, age, firing

type, and is also along the Missouri river. Please include a discussion of how the relevant BART factors are different for the two units. The costs for a wet scrubber at Stanton appear to be reasonable ($1480/ton).

b. Again, for this source, ND adjusted the baseline emission rate up for both fuels (i.e. from 1.8 to 2.4 lb/MMBtu for lignite and from 1.2 to 1.6 lb/MMBtu for sub-bituminous). As stated above we feel the baseline emission rate should be the same throughout the analysis. If the baseline emission rate were the same throughout the analysis, it would reduce the cost per ton presented, which already appears to be reasonable.

NOx BART

Over the past few years there has been much discussion regarding the application of SCR to lignite fired boilers. Due to the amount of time the EPA and the NPS have spent on this issue we believe they will respond most effectively and we will not offer specific comments on it other than to support the position of the NPS.

13. We would like to comment on an ancillary issue. ND states in the individual BART determinations, "The Department believes pilot scale testing would prove to be very beneficial in addressing the items of concern and provide a more detailed professionally reliable cost estimate. However, the BART process cannot mandate pilot testing be conducted to determine costs." We agree and suggest that should a decision be made not to apply SCR with this SIP, additional pilot testing would be useful and encourage ND to include enforceable schedules in the long term strategy portion of its RH SIP. Minnesota took just such an approach in its RH SIP for the taconite industry which, like lignite fired power plants in North Dakota, had little data on NOx controls and is almost entirely in one state.

14. We note that Leland Olds Unit 2, and MR Young Units 1 and 2 do not meet presumptive BART, which as noted above is described by EPA as "generally cost effective."

15. The startup/shutdown BART exemptions proposed for MR Young Units 1 and 2 are not necessary since the limit will be in the format of a 30 day rolling average. We have not seen such exemptions in BART determinations in other states. Four other BART units in ND are also using SNCR and are not asking for similar treatment. If these exemptions are allowed they should be severely limited by enforceable permit conditions, otherwise the integrity of the BART limit will be compromised.

Modeling – Chapter 8

We support comments from the Department of Interior agencies pertaining to this chapter.

Reasonable Progress

16. We applaud ND for the process it took to identify sources for which additional controls could be potentially applied under reasonable progress. Based on the Q/d metric, clearly Coyote and Antelope Valley Station (AVS) have visibility impacts that are on par with,

or exceed many of the subject to BART sources. These subject to BART sources were all prescribed to install additional SO_2 and NOx controls by ND in the draft SIP.

a. SO_2 - Improvements to the existing spray dryer system should be included as an option, and costs determined, in the control technology analyses done for the AVS units. EPA states the following for existing flue gas desulfurization systems in their BART guidelines, "There are numerous scrubber enhancements available to upgrade the average removal efficiencies of all types of existing scrubber systems…" This is the approach taken by ND for the Coal Creek units and MR Young Unit 2.
b. NOx - When comparing the emission rates from AVS and Coyote to the rest of the State's EGUs, AVS and Coyote would be the newest and the dirtiest. We note that ND states that moderate control options such as LNB/SNCR at 65% CE for AVS and ASOFA/SNCR at 55% CE at Coyote are reasonable (page 180 of the RH SIP).

ND claims that the improvement in visibility from installing controls at AVS and Coyote is too small to require their installation. It is unclear which modeling method/protocol was used to produce the visibility results in Table 9.9, which makes their use problematic. Nevertheless AVS and Coyote are of the same general size, and located in the same general area, as the BART sources. Therefore we feel reductions at AVS and Coyote are equally important to those at the BART sources. ND required controls at the BART sources. The amount of reductions from AVS and Coyote are significant – in the range of 30,000 tons of combined NOx and SO_2, not including any additional SO_2 that could be reduced from upgrading the spray dryers at AVS. Please consider controls on AVS and Coyote such as LNB/SNCR at 65% CE for AVS and ASOFA/SNCR at 55% CE at Coyote.

17. Under the section on "Energy and non-air quality environmental impacts," we encourage ND to include the environmental and health *benefits* of installing additional controls. In general, the benefits of installing controls on EGUs far outweigh the costs.
    a. For example the report EC/R did for Midwest RPO (http://www.ladco.org/reports/rpo/consultation/index.php) shows that the health benefits of reducing SO_2 and NOx emissions under a region-wide SO2 and NOx control strategy are generally expected to outweigh the costs of control. These health benefits stem from the reduced ambient levels of PM and ozone which would result from the control of SO_2 and NOx. "When benefits in the entire modeling domain were considered, the estimated values of these benefits outweighed the projected costs of control by more than a factor of 10" (page 106). This does not include other environmental benefits of controls which are harder to quantify but nonetheless important (e.g. reduction in mercury deposition).
    b. In the original Clean Air Interstate Rule (CAIR), the range of annual *net* benefits (benefits less costs) to society were calculated to be approximately $71.4 to $60.4 billion in 2010 and $98.5 to $83.2 billion in 2015 (FR 5/12/05, pg 25305)

Other Comments

18. We do not support the method used to adjust the glidepath to account for Canadian emissions used in the RH SIP. We do support DOIs suggestion of using species-specific information provided by the Western Regional Air Partnership (WRAP).

19. We found no specific discussion in the draft SIP that considered contingency measures or procedures which could be triggered if the unexpected or unforeseen occurs. For example, if projected future emissions reductions do not materialize, or are distributed differently over an alternate geographic area, emission inventories could be found to be incorrect or flawed. Are there adaptive management strategies or increased review strategies which could be implemented in those situations? What will be done in five-years if North Dakota is over their projected emissions inventory? The SIP should provide a contingency plan to address these concerns.

20. We request that ND note that there is a linkage between the PSD program, its visibility impacts, and the need to protect the 20 percent best visibility days. An adequate relationship between the SIP and ND's PSD program also helps ensure that new sources not jeopardize the reasonable progress goals established by the RH SIP.